

CLAIMS

What is claimed is:

1. A method of directing integration of a nucleic acid of interest to a predetermined site, wherein said nucleic acid has homology at or around said predetermined site, in a eukaryote with a preference for nonhomologous recombination, said method comprising:
steering an integration pathway towards homologous recombination.
2. The method of directing nucleic acid integration according to claim 1, further comprising: providing a mutant of a component involved in nonhomologous recombination.
3. The method of directing nucleic acid integration according to claim 1 or 2, further comprising: inhibiting a component involved in nonhomologous recombination.
4. The method according to claim 2 or 3 wherein said component involved in nonhomologous recombination comprises *ku70*, *rad50*, *mre11*, *xrs2*, *lig4* or *sir4*.
5. The method of directing integration of a nucleic acid of interest to a predetermined site according to any one of claims 1 to 3, wherein said nucleic acid of interest is essentially replacing a sequence within said eukaryote.
6. The method of directing integration of a nucleic acid of interest to a predetermined site according to claim 5, wherein said component involved in nonhomologous recombination comprises *rad50* or *xrs2*.
7. A method of directing integration of a nucleic acid of interest to a subtelomeric region, a telomeric region, or a subtelomeric region and telomeric region in a eukaryote with a preference for nonhomologous recombination by providing a mutant of a component involved in nonhomologous recombination.

8. A method of directing integration of a nucleic acid of interest to a subtelomeric region, a telomeric region, or a subtelomeric region and telomeric region in a eukaryote with a preference for nonhomologous recombination, comprising inhibiting a component involved in nonhomologous recombination.

9. The method of directing integration according to claim 7 or 8 wherein said component involved in nonhomologous recombination comprises *rad50*, *mre11* or *xrs2*.

10. The method according to any one of claims 1 to 9 wherein said eukaryote is selected from the group consisting of yeast, fungus, and an animal.

11. The method according to any one of claims 1 to 10, wherein said nucleic acid of interest is delivered to a cell of said eukaryote by *Agrobacterium*.

12. The method according to any one of claims 1-11 comprising transiently inhibiting integration via nonhomologous recombination.

13. The method according to claim 12 wherein said transiently inhibiting is provided by an *Agrobacterium* Vir-fusion protein capable of inhibiting a component involved in nonhomologous recombination.

14. The method of directing integration according to claim 13 wherein said *Agrobacterium* Vir-fusion protein comprises VirF or VirE2.

15. The method according to claim 13 or 14 wherein said component involved in nonhomologous recombination comprises *ku70*, *rad50*, *mre11*, *xrs2*, *lig4* or *sir4*.

16. The method according to any one of the foregoing claims wherein said nucleic acid of interest comprises an inactive gene to replace an active gene.

17. The method according to any one of claims 1-14, wherein said nucleic acid of interest comprises an active gene to replace an inactive gene.

18. The method according to any one of claims 1-14, wherein said nucleic acid of interest encodes a therapeutic proteinaceous substance.

19. The method according to any one of claims 1-14, wherein said nucleic acid of interest encodes a substance conferring resistance for an antibiotic substance to a cell.

20. The method according to any one of claims 1-14, wherein said nucleic acid of interest confers a desired property to said eukaryote.

21. The method according to any one of the foregoing claims wherein said nucleic acid of interest is part of a gene delivery vehicle.

22. Use of a method according to any one of claims 1 to 20 for improvement of gene-targeting efficiency.